



## **PROPOSED DOCUMENT**

**Global Harmonization Task Force**

**Title:** Principles of Medical Devices Classification

**Authoring Group:** Study Group 1 of the Global Harmonization Task Force

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## **Preface**

The document herein was produced by the Global Harmonization Task Force, a voluntary group of representatives from medical device regulatory authorities and the regulated industry. The document is intended to provide non-binding guidance for use in the regulation of medical devices, and has been subject to consultation throughout its development.

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## 1.0 Introduction

The primary way in which the Global Harmonization Task Force (GHTF) achieves its goals is through the production of harmonized guidance documents suitable for implementation or adoption by member Regulatory Authorities, as appropriate taking into account their existing legal framework, or by nations with developing regulatory programmes.

This guidance document is one of a series that together describe a global regulatory model for medical devices. Its purpose is to assist a manufacturer to allocate its medical device to an appropriate risk class using a set of harmonized principles. Regulatory Authorities have the responsibility of ruling upon matters of interpretation for a particular medical device. Once assigned, such classification will prescribe how the manufacturer will demonstrate that its device complies with other documents in the series and, in particular, with those entitled *Essential Principles of Safety and Performance of Medical Devices* and *Labelling for Medical Devices* should it be required or requested so to do by a Regulatory Authority, Conformity Assessment Body, user or third party.

This document should be read in conjunction with the GHTF document on *Principles of Conformity Assessment for Medical Devices* that recommends conformity assessment requirements appropriate to each of the four risk classes proposed herein. The linked development of documents on classification and conformity assessment are important to ensure a consistent approach across all countries/regions adopting the global regulatory model recommended by the GHTF, so that premarket approval for a particular device may become acceptable globally. Regulatory Authorities who may have different classification procedures are encouraged to adopt this GHTF guidance as the opportunity permits.

This document has been developed to encourage and support global convergence of regulatory systems. It is intended for use by Regulatory Authorities, Conformity Assessment Bodies and industry, and will provide benefits in establishing, in a consistent way, an economic and effective approach to the control of medical devices in the interest of public health.

Regulatory Authorities that are developing classification schemes or amending existing ones are encouraged to consider the adoption of the system described in this document, as this will help to reduce the diversity of schemes worldwide and facilitate the process of harmonization.

The regulatory requirements of some countries do not, at this time, align fully with this guidance.

This guidance document has been prepared by Study Group 1 of the Global Harmonization Task Force (GHTF). Comments or questions about it should be directed to either the Chairman or Secretary of GHTF Study Group 1 whose contact details may be found on the GHTF web page.

## 2.0 Scope

This document applies to all products that fall within the definition of a medical device that appears within the GHTF document *Information Concerning the Definition of the Term “Medical Device”*, **other than those** used for the *in vitro* examination of specimens derived from the human body.

## 3.0 References

### GHTF final documents

SG1/N009 *Labelling for Medical Devices*

SG1/N012 *Role of Standards in the Assessment of Medical Devices.*

SG1/N020 *Essential Principles of Safety and Performance of Medical Devices*

### GHTF documents proposed for public comment

SG1/N011 *Summary Technical Documentation for Demonstrating Conformity to the Essential Principles of Safety and Performance of Medical Devices.*

SG1/N029 *Information Document Concerning the Definition of the Term ‘Medical Device’.*

SG1/N041 *Essential Principles of Safety and Performance of Medical Devices (including In Vitro Diagnostic Devices).*

SG1/N043 *Labelling for Medical Devices (including In Vitro Diagnostic Devices).*

### GHTF working draft document not yet available for public comment

SG1/N040 *Principles of Conformity Assessment for Medical Devices.*

## 4.0 Definitions

**Active implantable medical device:** Any active medical device, together with any accessories for its proper functioning, which is intended to be totally or partially introduced, surgically or medically, into the human body or by medical intervention into a natural orifice, and which is intended to remain after the procedure. (Source - European Directive 90/385/EEC – but modified to include accessories)

**Active medical device:** Any medical device operation of which depends on a source of electrical energy or any source of power other than that directly generated by the human body or gravity and which acts by converting this energy. Medical devices intended to transmit energy, substances or other elements between an active medical device and the patient, without any significant change, are not considered to be active medical devices. (Source - European Directive 93/42/EEC)

**Active therapeutic device:** Any active medical device, whether used alone or in combination with other medical devices, to support, modify, replace or restore biological functions or structures with a view to treatment or alleviation of an illness, injury or handicap. (Source - European Directive 93/42/EEC)

**Active device intended for diagnosis:** Any active medical device, whether used alone or in combination with other medical devices, to supply information for detecting, diagnosing, monitoring or to support in treating physiological conditions, states of health, illnesses or congenital deformities. (Source – based on European Directive 93/42/EEC)

**Central circulatory system:** For the purpose of this document, 'central circulatory system' means the major internal blood vessels including the following: pulmonary veins, pulmonary arteries, cardiac veins, coronary arteries, common carotid arteries, cerebral arteries, brachiocephalic artery, aorta, inferior and superior vena cava, renal arteries and common iliac arteries.

**Central nervous system:** For the purpose of this document, 'central nervous system' means brain, meninges and spinal cord. (Source - European Directive 93/42/EEC)

#### **Duration of use**

**Transient:** Normally intended for continuous use for less than 60 minutes.

**Short term:** Normally intended for continuous use for between 60 minutes and 30 days.

**Long term:** Normally intended for continuous use for more than 30 days.

NOTE: For the purpose of this document, continuous use means the uninterrupted actual use of the device for the purpose intended by the manufacturer, except where the reason for interruption is to replace a failing/failed device with one that has the same intended purpose (e.g. replacement of a urinary catheter), where this should be regarded as an extension of continuous use.

(Source - European Directive 93/42/EEC)

**Harm:** Physical injury or damage to the health of people or damage to property or the environment. (Source – ISO/IEC Guide 51:1999)

**Hazard:** Potential source of harm (Source – ISO/IEC Guide 51:1999)

**Immediate danger:** A situation where the patient is at risk of either losing life or an important physiological function if no immediate preventative measure is taken

**Intended use / purpose:** Use of a product, process, or service in accordance with the specifications, instructions, and information provided by the manufacturer. (Source – ISO 14971)

## **Invasive devices**

**Invasive device:** A device, which, in whole or in part, penetrates inside the body, either through a body orifice or through the surface of the body.

**Body orifice:** Any natural opening in the body, as well as the external surface of the eyeball, or any permanent artificial opening, such as a stoma or permanent tracheotomy.

**Surgically invasive device:** An invasive device which penetrates inside the body through the surface of the body, with the aid or in the context of a surgical operation.

*NOTE: Devices other than those referred to in the previous subparagraph and which produce penetration other than through an established body orifice, should be treated as surgically invasive devices.*

**Implantable device:** Any device, including those that are partially or wholly absorbed, which is intended: -

- to be totally introduced into the human body or,
  - to replace an epithelial surface or the surface of the eye,
- by surgical intervention which is intended to remain in place after the procedure.

Any device intended to be partially introduced into the human body through surgical intervention and intended to remain in place after the procedure for at least 30 days is also considered an implantable device.

(Source - European Directive 93/42/EEC)

**Life supporting or life sustaining:** A device that is essential to, or that yields information that is essential to, the restoration or continuation of a bodily function important to the continuation of human life.

**Medical device:** See GHTF guidance document: *Information Concerning the Definition of the Term “Medical Device”* (SG1/N029).

**Reusable surgical instrument:** Instrument intended for surgical use by cutting, drilling, sawing, scratching, scraping, clamping, retracting, clipping or similar procedures, without

connection to any active medical device and which are intended by the manufacturer to be reused after appropriate procedures for cleaning and/or sterilisation have been carried out. (Source - European Directive 93/42/EEC – minor modifications)

**Risk:** Combination of the probability of occurrence of harm and the severity of that harm. (Source – ISO/IEC Guide 51:1999)

## 5.0 General Principles

Regulatory controls are intended to safeguard the health and safety of patients, users and other persons by ensuring that manufacturers of medical devices follow specified procedures during design, manufacture and marketing.

The risk presented by a particular device depends substantially on its intended purpose and the effectiveness of the risk management techniques applied during design, manufacture and use.

The GHTF guidance documents *Essential Principles of Safety and Performance of Medical Devices* and *Labelling for Medical Devices* **apply to all devices whatever their risk class.**

Regulatory controls should be proportional to the level of risk associated with a medical device. The level of regulatory control should increase with increasing degree of risk, taking account of the benefits offered by use of the device. At the same time, the imposition of regulatory controls should not place an unnecessary burden on regulators or manufacturers.

Therefore:

- there is a need to classify medical devices based on their risk to patients, users and other persons; and
- there is benefit for manufacturers and Regulatory Authorities if a globally harmonized classification system is developed.

The risk presented by a device also depends, in part, on the degree of innovation in a device, its intended use, its intended user(s), its mode of operation, and/or technologies. In general, the classification rules are intended to accommodate such innovations. Without prejudice to these rules, Regulatory Authorities may wish to require the notification of new devices being placed on the market in their jurisdictions. Such notification may be used in assessing the evidence requirements for use in the conformity assessment process. It may also be used to consider the need, if any, for possible re-classification and/or changes in these harmonized classification rules.

## 6.0 Recommendations

### 6.1 Primary Recommendations

- Regulatory Authorities should work towards the establishment of a global classification system.
- Such a system should be based upon common features of existing national requirements with the aim of future convergence.
- This system should consist of four risk classes. Based on experience of GHTF Founding Members, this is sufficient to accommodate all medical devices and allows an efficient and graduated system of conformity assessment controls.
- The initial determination of class should be based on a set of rules derived from those features of devices that create risk. In most cases the initial rules based classification will also be the final classification.
- These rules should be sufficiently clear that manufacturers may readily identify the class of their medical devices, subject, as required, to final classification by the Regulatory Authority.
- The rules should be capable of accommodating future technological developments.
- The manufacturer should document its justification for placing its product into a particular risk class, including the resolution of any matters of interpretation where it has asked a Conformity Assessment Body and/or Regulatory Authority for a ruling.
- Decisions on final classifications, which deviate from the initial rules-based classification, should be weighed against the disadvantages of disharmonized international classification.

### 6.2 Factors Influencing Device Classification

A number of factors, including for example the duration of device contact with the body, the degree of invasiveness, whether the device delivers medicines or energy to the patient, whether they are intended to have a biological affect on the patient and local *versus* systemic effects (e.g. conventional *versus* absorbable sutures) may, alone or in combination, affect device classification.

Where more than one of the classification rules applies to the medical device, it should be allocated to the highest class indicated.

Where one medical device is intended to be used together with another medical device, that may or may not be from the same manufacturer, (e.g. a physiological monitor and a separate recorder, or a general purpose syringe and a syringe driver), the classification rules should apply separately to each of the devices.

Classification of an assemblage of medical devices that individually comply with all regulatory requirements depends on the manufacturer's purpose in packaging and marketing such a combination of separate devices. For example:

- If the combination results in a product that is intended by the manufacturer to meet a purpose different from that of the individual medical devices that make it up, the combination is a new medical device in its own right and should be classified according to the new intended use.
- If the combination is for the convenience of the user but does not change the intended uses of the individual medical devices that make it up (e.g. a customised kit that provides all the devices necessary to carry out a particular surgical procedure) there is no need to classify the combination as a whole although the manufacturer may do so if it wishes.

If one or more of the medical devices that is in the assemblage has yet to comply with all the relevant regulatory requirements, the combination should be classified as a whole according to its intended use.

Accessories intended specifically by manufacturers to be used together with a 'parent' medical device to enable that medical device to achieve its intended purpose, should be subject to the same GHTF guidance as applies to the medical device itself. For classification purposes an accessory may be classified as though it is a medical device in its own right.

While most software is incorporated into the medical device itself, some is not. Provided such standalone software falls within the scope of the definition for a 'medical device', it should be classified as follows:

- Where it drives or influences the use of a separate medical device, it will have the same class as the device itself.
- Where it is independent of any other medical device, it is classified in its own right using the rules in Section 8.0 of this document.

Every region and country has to evaluate new products in the context of their own health care system and experience with similar products and the context for use. Risk classification should be based not only on the characteristics of the device and intended use, but also the context of the use in specific health care systems. For example, introduction of a complex novel technology in a country with little prior use of similar products may require higher risk classification.

Experience gained from the clinical use of a particular type of medical device may suggest that the rules appearing in Section 8.0 of this document are inappropriate. Current GHTF procedures require that all GHTF documents be reviewed at regular intervals. Such a review of this document will provide any participant with an opportunity to suggest a change of text that, in their opinion, will address any shortcoming.

The purpose of risk classification is to provide that the regulatory controls applied to a medical device proportionate to risk. Statutory conformity assessment authority provides Regulatory Authorities methods to assure compliance with regulatory controls. At this time, conformity assessment requirements and other regulatory controls assigned to each class of device by different Regulatory Authorities have yet to be harmonized and may vary. While

Study Group 1 of GHTF continues to support and encourage regulatory harmonization, it recognises that some Regulatory Authorities may have to reflect different local needs when they introduce new regulations on classification, for example, in the application of devices covered by the Additional Rules 13 to 16. Study Group 1 hopes any such differences will disappear in the course of time.

### 6.3 Proposed General Classification System for Medical Devices

**Figure 1** indicates the four risk classes of devices. The examples given are for illustration only and the manufacturer must apply the classification rules to each medical device according to its intended purpose.

**Figure 1: Proposed general classification system for medical devices**

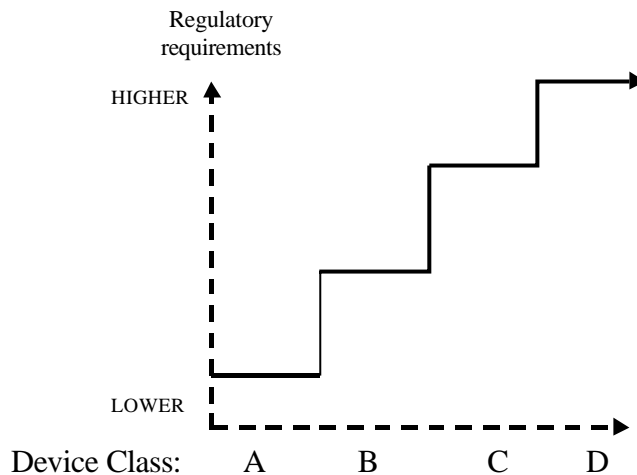
CLASS	RISK LEVEL	DEVICE EXAMPLES
A	Low Risk	Surgical retractors / tongue depressors
B	Low-moderate Risk	Hypodermic Needles / suction equipment
C	Moderate-high Risk	Lung ventilator / orthopaedic implants
D	High Risk	Heart valves / implantable defibrillator

**Figure 2** shows a conceptual illustration of increasing levels of regulatory requirements as the device risk class increases. These regulatory controls may include, for example: -

- operation of a quality system (recommended for all devices);
- documentation of clinical evidence to support the manufacturer's claims;
- technical data;
- product testing using in-house or independent resources;
- the need for and frequency of independent external audit of the manufacturer's quality system; and
- independent external review of the manufacturer's technical data.

The concept is expanded in the GHTF guidance document entitled *Principles of Conformity Assessment for Medical Devices*.

**Figure 2: Conceptual illustration of regulatory controls increasing with device risk class**



## 7.0 The Determination of Device Class using this Rules-based System

The manufacturer should:

1. Decide if the product concerned is a medical device, using the appropriate definition.

**NOTE:** Medical devices that are used for the *in vitro* examination of specimens derived from the human body are not covered by the classification rules within this document (see Scope).

2. Determine the intended use of the medical device.
3. Take into consideration all the rules that follow in order to establish the proper classification for the device, noting that **where a medical device has features that place it into more than one class, classification and conformity assessment should be based on the highest class indicated.**
4. Determine that the device is not subject to special national rules that apply within a particular jurisdiction.

**NOTES:** Once a rules-based system has been adopted, modifications **may occasionally be required**. For example, where through post-market experience, a level of risk for a

type of medical device, classified using the criteria found in this guidance document is no longer appropriate, consideration should be given to re-classification by a change to the rules.

Similarly, the historical knowledge of a device may necessitate a different class than the one assigned by the initial classification. Unlike the principle of reclassification after post-market experience with a device, this principle of historical knowledge should be applied immediately when the initial classification yields an inappropriate result.

Where special national rules are applied, resulting in a device class other than that suggested by the present rules, then a different conformity assessment procedure may be indicated. This may have an effect on the acceptability of such devices for free movement in countries where these present rules have been adopted unless other, or additional, conformity assessment procedures are carried out.

## 8.0 Initial Classification Rules

The actual classification of each device depends on the precise claims made by the manufacturer and on its intended use. While the provision of examples in the table that follows is helpful when interpreting the purpose of each rule, it must be emphasised that the **actual classification of a particular device** must be considered individually, taking account of its design and intended use.

Where a medical device has features that place it into more than one class, conformity assessment should be based on the highest class indicated.

RULE	ILLUSTRATIVE EXAMPLES OF DEVICES THAT MAY CONFORM WITH A RULE
<b>➤ NON-INVASIVE DEVICES</b>	
1. All non-invasive devices are in Class A, unless Rule 2, 3 or 4 applies.	These devices either do not touch the patient or contact intact skin only. <u>Examples:</u> urine collection bottles; compression hosiery; non-invasive electrodes, hospital beds. <b>NOTE:</b> Non-invasive devices that are <u>indirectly</u> in contact with the body & can influence internal physiological processes by storing, channelling or treating blood, other body liquids or liquids which are returned or infused into the body or by generating energy that is delivered to the body are outside the scope of this rule.
2. All non-invasive devices intended for channelling or storing blood, body	Such devices are 'indirectly invasive' in that they channel or store liquids that will

liquids or tissues, liquids or gases for the purpose of eventual infusion, administration or introduction into the body are in Class A,	eventually be delivered into the body (see comment for Rule 1). <u>Examples:</u> administration sets for gravity infusion; syringes without needles.
<b>unless</b> they may be connected to an active medical device in Class B or a higher class, in which case they are Class B;	<u>Examples:</u> syringes and administration sets for infusion pumps; anaesthesia breathing circuits. <b>NOTE:</b> “Connection” to an active device covers those circumstances where the safety and performance of the active device is influenced by the non-active device and <i>vice versa</i> .
<b>unless</b> they are intended for use of storing or channeling blood or other body liquids or for storing organs, parts of organs or body tissues, in which case they are Class B.	<u>Examples:</u> tubes used for blood transfusion. <b>NOTE:</b> in some jurisdictions, blood bags have a special rule that places them within a higher risk class.
3. All non-invasive devices intended for modifying the biological or chemical composition of blood, other body liquids or other liquids intended for infusion into the body are in Class C,	Such devices are indirectly invasive in that they treat or modify substances that will eventually be delivered into the body (see comment for Rule 1). They are normally used in conjunction with an active device within the scope of either Rule 9 or 11. <u>Examples:</u> haemodialyzers; devices to remove white blood cells from whole blood. <b>NOTE:</b> for the purpose of this part of the rule, ‘modification’ does not include simple, mechanical filtration or centrifuging which are covered below.
<b>unless</b> the treatment consists of filtration, centrifuging or exchanges of gas or of heat, in which case they are in Class B.	<u>Examples:</u> devices to warm or cool blood; devices to remove carbon dioxide; particulate filters in an extracorporeal circulation system.
4. All non-invasive devices which come into contact with injured skin:	Devices covered by this rule are extremely claim sensitive.
- are in Class A if they are intended to be used as a mechanical barrier, for compression or for absorption of exudates;	<u>Examples:</u> simple wound dressings; cotton wool.
<b>unless</b> intended to be used principally with wounds which have breached the dermis and can only heal by secondary intent, in which case they are in Class C.	Devices used to treat wounds where the subcutaneous tissue is at least partially exposed and the edges of the wound are not sufficiently close to be pulled together. The device manufacturer

	claims that they promote healing through physical methods other than providing a barrier are in Class C. <u>Examples:</u> dressings for chronic ulcerated wounds; dressings for severe burns.
- are in Class B in all other cases, including devices principally intended to manage the microenvironment of a wound.	<u>Examples:</u> non-medicated impregnated gauze dressings.
<b>➤ INVASIVE DEVICES</b>	
5. All invasive devices with respect to body orifices (other than those which are surgically invasive) and which: a) are not intended for connection to an active medical device or b) are intended for connection to a Class A medical device	Such devices are invasive in body orifices (refer to definition) and are not surgically invasive. Devices tend to be diagnostic and therapeutic instruments used in ENT, ophthalmology, dentistry, proctology, urology and gynaecology. Classification depends on the time of invasion and the sensitivity (or vulnerability) of the orifice to such invasion.
- are in Class A if they are intended for transient use;	<u>Examples:</u> dental impression materials; examination gloves; enema devices.
- are in Class B if they are intended for short-term use;	<u>Examples:</u> contact lenses, urinary catheters, tracheal tubes.
<b>unless</b> they are used in the oral cavity as far as the pharynx, in an ear canal up to the ear drum or in a nasal cavity, in which case they are in Class A,	<u>Examples:</u> dentures intended to be removed by the patient; dressings for nose bleeds.
- are in Class C if they are intended for long-term use;	<u>Example:</u> urethral stent; contact lenses for long-term continuous use (for this device, removal of the lens for cleaning or maintenance is considered as part of the continuous use).
<b>unless</b> they are used in the oral cavity as far as the pharynx, in an ear canal up to the ear-drum or in a nasal cavity and are not liable to be absorbed by the mucous membrane, in which case they are in Class B.	<u>Examples:</u> orthodontic wire, fixed dental prosthesis.
All invasive devices with respect to body orifices (other than those which are surgically invasive) that are intended to be connected to an active medical device in Class B or a higher	<u>Examples:</u> tracheal tubes connected to a ventilator; suction catheters for stomach drainage; dental aspirator tips. <b>NOTE:</b> independent of the time for which they are invasive.

class, are in Class B.	
6. All surgically invasive devices intended for transient use are in Class B,	<p>A majority of such devices fall into three major groups: those that create a conduit through the skin (e.g. syringe needles; lancets), surgical instruments (e.g. single-use scalpels; surgical staplers; surgical gloves; single-use aortic punch) and various types of catheter /sucker etc.</p> <p><b>NOTE:</b> a surgical instrument (other than those in Class D) is in Class A if reusable and in Class B if supplied sterile and intended for single use. Also, a surgical instrument connected to an active device is in a higher class than A.</p> <p><b>NOTE:</b> if the device incorporates a medicinal substance in a secondary role refer to Rule 13.</p>
<b>unless</b> they are reusable surgical instruments, in which case they are in Class A;	<u>Examples:</u> Manually operated surgical drill bits and saws.
<b>unless</b> intended to supply energy in the form of ionizing radiation, in which case they are in Class C;	<u>Example:</u> catheter incorporating/containing sealed radioisotopes.
<b>unless</b> intended to have a biological effect or be wholly or mainly absorbed, in which case they are in Class C;	<b>NOTE:</b> the 'biological effect' referred to is an intended one rather than unintentional. The term 'absorption' refers to the degradation of a material within the body and the metabolic elimination of the resulting degradation products from the body.
<b>unless</b> intended to administer medicines by means of a delivery system, if this is done in a manner that is potentially hazardous taking account of the mode of application, in which they are in Class C.	<p><u>Example:</u> insulin pen for self-administration.</p> <p><b>NOTE:</b> the term 'administration of medicines' implies storage and/or influencing the rate/volume of medicine delivered not just channelling. The term 'potentially hazardous manner' refers to the characteristics of the device and not the competence of the user.</p>
<b>unless</b> intended specifically to diagnose, monitor or correct a defect of the heart or of the central circulatory system through direct contact with these parts of the body, in which case they are in Class D.	<u>Examples:</u> angioplasty balloon catheters and related guide wires; dedicated disposable cardiovascular surgical instruments.
7. All surgically invasive devices	Such devices are mostly used in the

intended for short-term use are in Class B,	context of surgery or post-operative care, or are infusion devices, or are catheters of various types. <u>Examples</u> : clamps; infusion cannulae; temporary filling materials; non-absorbable skin closure devices; tissue stabilisers used in cardiac surgery. <b>NOTE</b> : includes devices that are used during cardiac surgery but do not monitor or correct a defect. <b>NOTE</b> : if the device incorporates a medicinal substance in a secondary role refer to Rule 13.
<b>unless</b> they are intended to administer medicines, in which case they are in Class C;	<b>NOTE</b> : the term ‘administration of medicines’ implies storage and/or influencing the rate/volume of medicine delivered not just channelling.
<b>unless</b> they are intended to undergo chemical change in the body (except if the devices are placed in the teeth), in which case they are in Class C; <b>unless</b> they are intended to supply energy in the form of ionizing radiation, in which case they are in Class C;	<u>Example</u> : surgical adhesive.  <u>Example</u> : brachytherapy device.
<b>unless</b> they are intended to have a biological effect or to be wholly or mainly absorbed, in which case they are in Class D;	<u>Example</u> : absorbable suture; biological adhesive. <b>NOTE</b> : the ‘biological effect’ referred to is an intended one rather than unintentional. The term ‘absorption’ refers to the degradation of a material within the body and the metabolic elimination of the resulting degradation products from the body.
<b>unless</b> they are intended specifically for use in direct contact with the central nervous system, in which case they are in Class D;	<u>Example</u> : neurological catheter.
<b>unless</b> they are intended specifically to diagnose, monitor or correct a defect of the heart or of the central circulatory system through direct contact with these parts of the body, in which case they are in Class D.	<u>Examples</u> : cardiovascular catheters; temporary pacemaker leads; carotid artery shunts.
8. All implantable devices, and long-term surgically invasive devices, are in Class C,	Most of the devices covered by this rule are implants used in the orthopaedic, dental, ophthalmic and cardiovascular

	fields. <u>Example:</u> maxilla-facial implants; prosthetic joint replacements; bone cement; non-absorbable internal sutures; posts to secure teeth to the mandibula bone (without a bioactive coating). <b>NOTE:</b> if the device incorporates a medicinal substance in a secondary role refer to Rule 13.
<b>unless</b> they are intended to be placed into the teeth, in which case they are in Class B;	<u>Examples:</u> bridges; crowns; dental filling materials.
<b>unless</b> they are intended to be used in direct contact with the heart, the central circulatory system or the central nervous system, in which case they are in Class D;	<u>Examples:</u> prosthetic heart valves; spinal and vascular stents.
<b>unless</b> they are intended to be life supporting or life sustaining, in which case they are in Class D;	
<b>unless</b> they are intended to be active implantable medical devices, in which case they are Class D;	<u>Example:</u> pacemakers, their electrodes and their leads; implantable defibrillators.
<b>unless</b> they are intended to have a biological effect or to be wholly or mainly absorbed, in which case they are in Class D;	<u>Example:</u> implants claimed to be bioactive. <b>NOTE:</b> hydroxy-apatite is considered as having biological effect only if so claimed and demonstrated by the manufacturer.
<b>unless</b> they are intended to administer medicines, in which case they are in Class D;	<u>Example:</u> rechargeable non-active drug delivery system.
<b>unless</b> they are intended to undergo chemical change in the body (except if the devices are placed in the teeth), in which case they are in Class D.	<b>NOTE:</b> bone cement is not within the scope of the term 'chemical change in the body' since any change takes place in the short rather than long term.
<b>unless</b> they are breast implants, in which case they are in Class D.	
<b>➤ ACTIVE DEVICES</b>	
9. All active therapeutical devices intended to administer or exchange energy are in Class B,	Such devices are mostly electrically powered equipment used in surgery; devices for specialised treatment and some stimulators. <u>Examples:</u> muscle stimulators; TENS devices; powered dental hand pieces; hearing aids; neonatal phototherapy

	equipment; ultrasound equipment for physiotherapy.
<b>unless</b> their characteristics are such that they may administer or exchange energy to or from the human body in a potentially hazardous way, including ionizing radiation, taking account of the nature, the density and site of application of the energy, in which case they are in Class C.	<u>Examples:</u> lung ventilators; baby incubators; electrosurgical generators; external pacemakers and defibrillators; surgical lasers; lithotriptors; therapeutic X-ray and other sources of ionizing radiation. <b>NOTE:</b> the term 'potentially hazardous' refers to the type of technology involved and the intended application.
All active devices intended to control or monitor the performance of active therapeutical devices in Class C, or intended directly to influence the performance of such devices, are in Class C.	<u>Examples:</u> external feedback systems for active therapeutical devices.
10. Active devices intended for diagnosis are in Class B:  - if they are intended to supply energy which will be absorbed by the human body (except for devices used solely to illuminate the patient's body, with light in the visible or near infra-red spectrum, in which case they are Class A), or	Such devices include equipment for ultrasonic diagnosis/imaging, capture of physiological signals, interventional radiology and diagnostic radiology. <u>Examples:</u> magnetic resonance equipment; diagnostic ultrasound in non-critical applications; evoked response stimulators.
- if they are intended to image <i>in vivo</i> distribution of radiopharmaceuticals, or	<u>Example:</u> gamma/nuclear cameras.
- if they are intended to allow direct diagnosis or monitoring of vital physiological processes,	<u>Example:</u> electronic thermometers, stethoscopes and blood pressure monitors; electrocardiographs.
<b>unless</b> they are specifically intended for: a) monitoring of vital physiological parameters, where the nature of variations is such that it could result in immediate danger to the patient, for instance variations in cardiac performance, respiration, activity of central nervous system, or b) diagnosing in clinical situations where the patient is in immediate danger, in which case they are in Class C.	<u>Example:</u> monitors/alarms for intensive care; biological sensors; oxygen saturation monitors; apnoea monitors.  <u>Example:</u> ultrasound equipment for use in interventional cardiac procedures.
Active devices intended to emit ionizing	<u>Example:</u> diagnostic X-ray source;

radiation and intended for diagnostic and/or interventional radiology, including devices which control or monitor such devices, or those which directly influence their performance, are in Class C.	devices for the control, monitoring or influencing of the emission of ionizing radiation.
11. All active devices intended to administer and/or remove medicines, body liquids or other substances to or from the body are in Class B,	Such devices are mostly drug delivery systems, or anaesthesia equipment. Examples: feeding pumps; jet injectors.
<b>unless</b> this is done in a manner that is potentially hazardous, taking account of the nature of the substances involved, of the part of the body concerned and of the mode of application, in which case they are in Class C.	<u>Examples:</u> infusion pumps; anaesthesia equipment; dialysis equipment; hyperbaric chambers.
12. All other active devices are in Class A.	<u>Examples:</u> examination lamps; surgical microscopes; powered hospital beds & wheelchairs; powered equipment for the recording, processing, viewing of diagnostic images; dental curing lights.
<b>➤ ADDITIONAL RULES</b>	
13. All devices incorporating, as an integral part, a substance which, if used separately, can be considered to be a medicinal product, and which is liable to act on the human body with action ancillary to that of the devices, are in Class D.	These devices cover combination devices that incorporate medicinal substances in a secondary role. <u>Examples:</u> antibiotic bone cements; heparin-coated catheters; wound dressings incorporating antimicrobial agents to provide ancillary action on the wound.
14. All devices manufactured from or incorporating animal or human cells/tissues/derivatives thereof, whether viable or non-viable, are Class D,	<b>NOTE:</b> In some jurisdictions such products: - are considered to be outside the scope of the medical device definition; - may be subject to different controls.  It is likely the regulations controlling these devices will be the subject of future harmonization efforts. <u>Examples:</u> porcine heart valves; catgut sutures.
<b>unless</b> such devices are manufactured from or incorporate non-viable animal tissues or their derivatives that come in contact with intact skin only, where they are in Class A.	<u>Examples:</u> leather components of orthopaedic appliances.
15. All devices intended specifically to	<u>Examples:</u> disinfectants intended to be

be used for disinfecting or sterilising medical devices are in Class B,	used with medical devices; washer disinfectors. <b>NOTE:</b> This rule does not apply to products that are intended to clean medical devices other than contact lenses by means of physical action e.g. washing machines.
<b>unless</b> they are intended specifically to be used for disinfecting, cleaning, rinsing or, when appropriate, hydrating contact lenses, in which case they are in Class C.	<u>Examples:</u> contact lens solutions. <b>NOTE:</b> In some jurisdictions solutions for use with contact lenses: - are considered to be outside the scope of the medical devices definition; - may be subject to different controls.
16. All devices used for contraception or the prevention of the transmission of sexually transmitted diseases are in Class C,	<u>Examples:</u> condoms; contraceptive diaphragms.
<b>unless</b> they are implantable or long-term invasive devices, in which case they are in Class D.	<u>Example:</u> intrauterine contraceptive device.

Decision trees illustrating how these rules may be used to classify specific devices are shown in Appendix A.

## 8.1 Rationale for the inclusion of the Additional Rules into this document

There are a small number of products that fall within the scope of the definition of a medical device and which may need to be classified to take account of factors other than those covered by the risk-based rules (Rules 1 to 12). For the understanding of those countries that are not Founding Members of GHTF, it is felt important to offer guidance on the classification of such devices (see Clause 6.2, above). Therefore, four Additional Rules are provided (Rules 13 to 16).

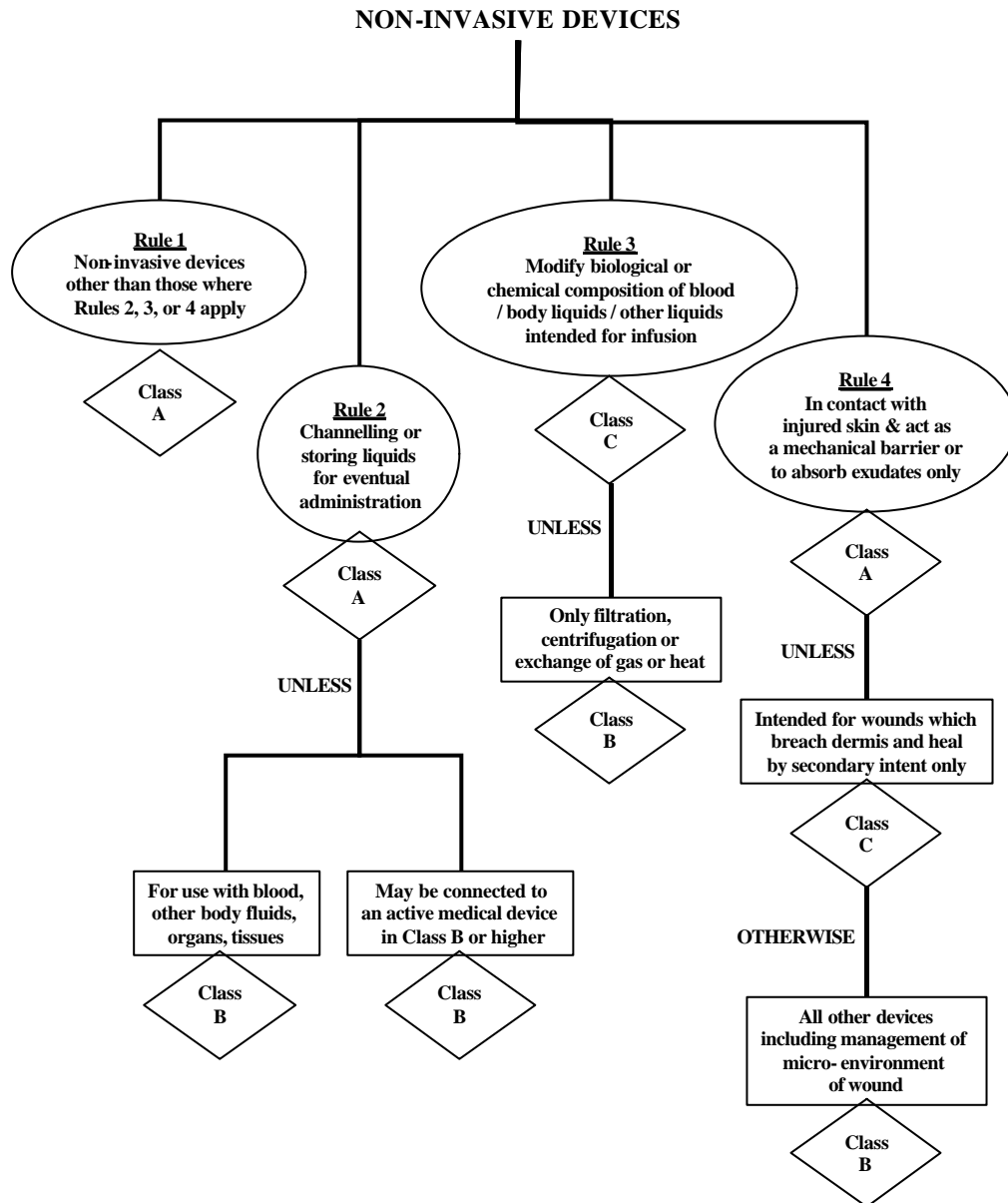
Matters that may need to be considered are: -

- Rule 13:** Devices incorporating a medicinal product
- The regulations applying to medicinal products require different acceptance procedures to those for medical devices.
  - The behavior of a medicinal product used in conjunction with a medical device may differ from that covered by its approved use as a medicine alone.
  - The public perception of possible risks associated with such devices demands a high classification.

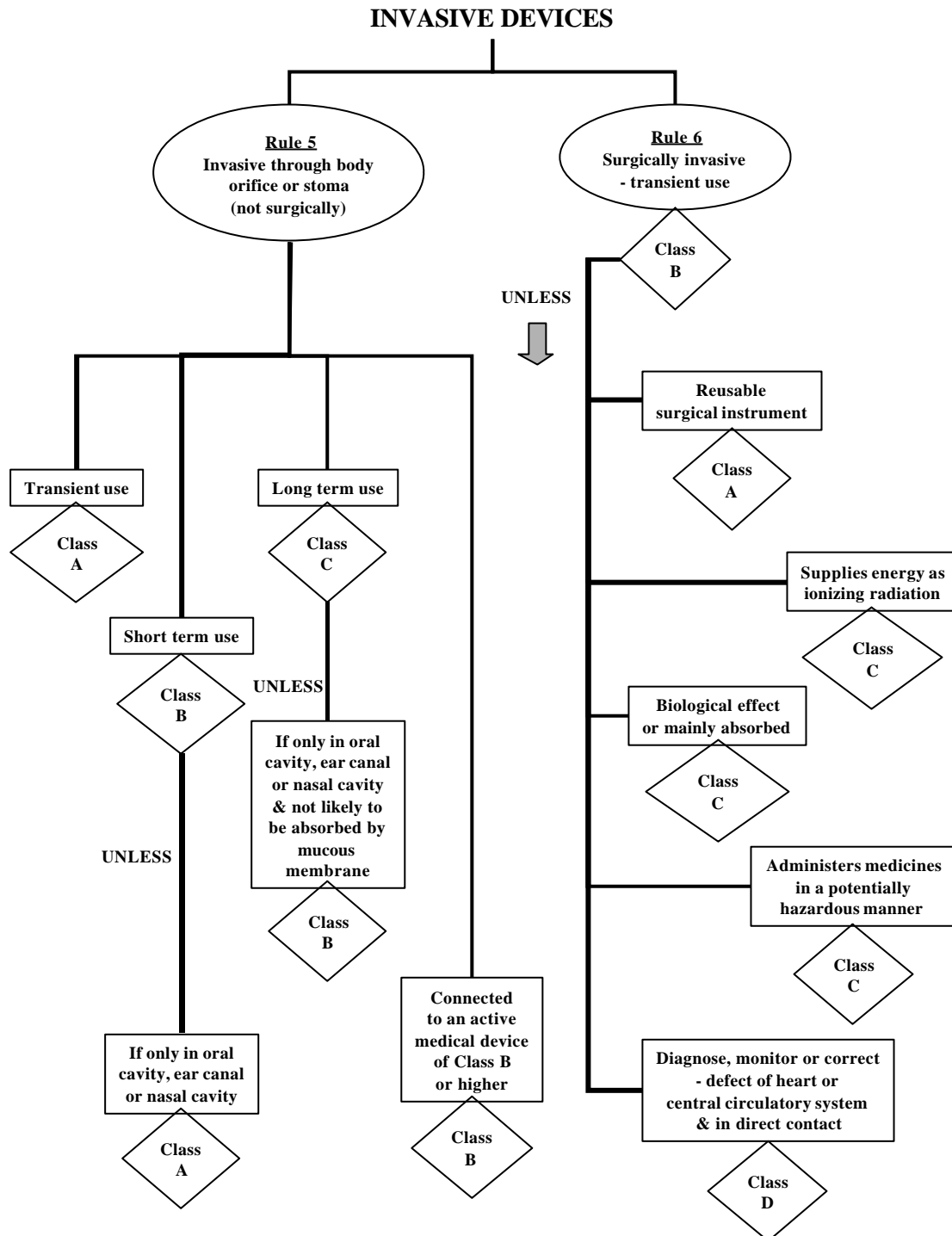
- Rule 14:** Devices incorporating animal or human tissues
- There is an absence of global regulatory controls for such devices.
  - Classification needs to acknowledge the many different ethical and religious cultures throughout the world have an opinion on such devices.
  - The public perception of possible risks associated with such devices, particularly after the problems caused by Bovine Spongiform Encephalopathies (BSE) and Creutzfeldt-Jacob disease (CJD), demands a high classification.
- Rule 15** Disinfectants
- The particular concerns relating to those disinfectants that are used with contact lenses, due to sensitivity and vulnerability of the eye.
- Rule 16** Contraceptive devices
- The risks associated with unwanted pregnancy if caused by mechanical failure of the device.
  - The need to safeguard public health through the use of condoms to reduce the prevalence of sexually transmitted diseases.
  - Public expectation that contraceptive devices are perfectly reliable and safe despite published data to the contrary.
  - High political profile of these devices in assuring the protection of public health

## **Appendices**

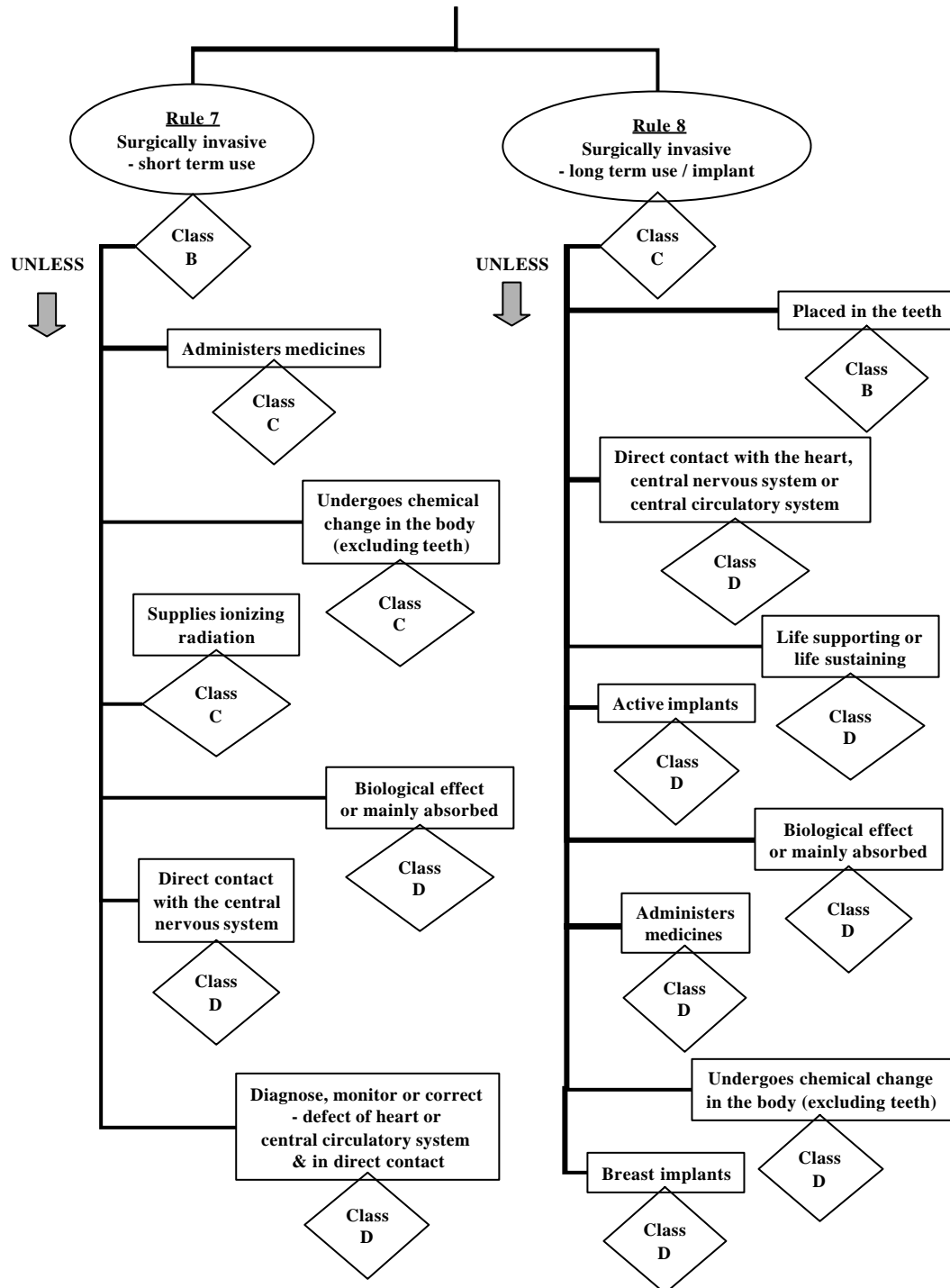
## Appendix A: Decision trees to demonstrate how the rules may be used to classify specific devices.



**NOTE:** this diagram and those that follow are for illustrative purposes only and the determination of risk class for a particular device should be made by referring to the rules themselves and not the decision trees. Where a medical device has features that place it into more than one class, conformity assessment should be based on the highest class indicated.



## INVASIVE DEVICES (continued)



## ACTIVE DEVICES

